INSECTS OF MICRONESIA
Coleoptera: Rhysodidae

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Abstract: The Micronesian rhysodid fauna, comprising the genera *Omoglymmius* Ganglbauer and *Rhyzodiastes* Fairmaire, is reviewed for the first time. Of the 6 species treated, 5 are described as new. All species are keyed, with additional species from the Pacific and SE Asia included in the *Omoglymmius* key. All species are illustrated.

INTRODUCTION

The Rhysodidae or Rhysodini are a group of wood-inhabiting beetles found in most forested regions of the world. There are two opinions as to the placement of the group. It has long been regarded as a small independent family in the Adephaga. We (Bell & Bell, 1962) proposed instead, that they represent a highly modified offshoot of the Carabidae and ranked the group tentatively as a tribe. Whatever the final status given this group, it merits separate treatment in *Insects of Micronesia,* since it was not included among the Carabidae by Darlington (1970).

This report treats 2 genera and 6 species of rhysodid beetles from Micronesia, including 5 species described as new. Almost all of the specimens studied were obtained via Bishop Museum through the kindness of Dr. G. A. Samuelson. They stem mostly from Pacific Science Board collections belonging to Bishop Museum (BISHOP), California Academy of Sciences in San Francisco (CAS), Field Museum of Natural History in Chicago (FMNH) [=CM], Museum of Comparative Zoology, Harvard University in Cambridge (MCZ), and National Museum of Natural History in Washington (US). A few examples are deposited in the University of Vermont in Burlington (UVM). Specimens from the Teiso Esaki Collection from Micronesia, belonging to Kyushu University in Fukuoka (KU) were also obtained via Bishop Museum. Material from other sources include the type of *Clinidium sulcicolle* (Grouvelle) in the Museum National d'Histoire Naturelle in Paris (MNHN) and several additional specimens of this species in the British Museum (Natural History) in London (BMNH). We thank Drs. A. Descarpentries and Peter Hammond for the opportunity to see these specimens. We also gratefully acknowledge Mrs. Joyce Murray for typing the manuscript.

The most recent revision of the Rhysodidae is that of Arrow (1942). We are presently monographing the group on a world basis. The first part contains a new classification at the subgenus level and above (Bell & Bell, 1978). The 2 genera found in Micronesia, *Omoglymmius* and *Rhyzodiastes,* will be revised in Parts 3 and 4 respectively, while the morphology, phylogeny and zoogeography of the entire group will be treated finally in Part 5. At present, the only keys available for *Omoglymmius* and *Rhyzodiastes* are those by Arrow (1942). It has been necessary to coin many new terms for use in describing Rhysodini and these are defined and illustrated in Bell & Bell (1978).

BIONOMICS

Both larvae and adults of Rhysodini live within partly rotted wood. The adults, in most species at least, do not excavate a burrow but rather push their way among the wood fibers, perhaps using the mandibles and the protruding anterior edge of the mentum to cut some of the fibers. On occasion they can be found within surprisingly hard wood. We often use axes, machetes, and saws as collecting instruments. Rhysodini probably feed on slime molds or fungal hyphae and not on the wood itself. Sometimes they can be located by first finding their excreta, which are a characteristic magenta color that can be conspicuous on white wood fibers. Rhysodini are not confined to logs that are entirely rotten. Often they are found in soft spots in logs that are mostly dry and hard. They have also been found in dead limbs on living trees. These habits make them particularly suited to dispersal in driftwood.

The larvae are seldom found. When discovered, they are almost always associated with adults. The larvae seem to be confined to relatively soft wood, while the adults can live in both soft and hard wood.

ZOOGEOGRAPHY

Rhysodini are well adapted for crossing water gaps in drifting logs. At the same time, they appear to be poorly adapted for dispersal by any other means. The exoskeleton of the adult is enormously thickened, probably to resist crushing by the wood fibers among which they thrust themselves. Thus, a rhysodine has a high specific gravity, and is unlikely to be transported passively through the air. This is made all the more unlikely by the extreme infrequency with which they leave the wood. One of the 2 Micronesian genera, *Rhyzodiastes,* has vestigial wings and reduced eyes, so active flight can be ruled out. The other genus, *Omoglymmius,* has large eyes and fully developed wings and presumably can fly, though it has never been observed in flight. Active flight must be considered as a possible means of dispersal in this genus. We consider that it is highly unlikely to

Table 1. Distribution of Micronesian Rhysodidae

	Micronesian Island Groups											
				Caroline								
	Bonin	N. Mariana	S. Mariana	Palau*	Yap	Caroline Atolls	Truk	Ponape	Kusaie**	Marshall	Gilbert***	Other Localities
1. Omoglymmius caelatus				X								
2. O. impletus					X							
3. O. oceanicus				?				X	X			
4. Rhyzodiastes pollinosus				X	X	X						
5. R. sulcicollis						X	X					
6. R. maritimus									X			

* Now Belau. ** Now Kosrae. *** Western sector of Kiribati.

fly from one island to another. The high specific gravity must make flight slow and expensive in terms of energy. Periods of flight must be brief and are perhaps limited to movement from one tree to another. The distributions of the species of *Omoglymmius* are quite similar to those of *Rhyzodiastes,* suggesting that the former gains no advantage from its wings in terms of long migrations.

Rhysodini have been found in Micronesia only in the Caroline Islands, and are unknown from the Marianas, Bonins, Gilberts and Marshalls. Much of the Caroline Is are located in the region of the Equatorial Countercurrent so they are in a particularly favorable position to receive driftwood from lands to the west, particularly the southern Philippines and the Moluccas. It seems significant that nowhere else do the Rhysodini reach islands which are so remote from large land masses. Further south, Rhysodini reach Fiji, New Caledonia and New Zealand. These are much larger islands than those of Micronesia and are believed to be much older. The Rhysodini may have reached them when the configuration of the land was quite different from that of the present, and travel on driftwood may not have been the means of dispersal. Though Fiji has 2 genera, 1 of which is represented by 2 subgenera, Rhysodini have not penetrated beyond Fiji, even to the nearby Tonga Is, while in the Carolines they have extended across the entire archipelago, even to the remote eastern island of Kusaie. This may be attributed to the South Equatorial Current, which would carry driftwood from Fiji westward towards the New Hebrides and New Guinea, and not eastward.

Six species of Rhysodini occur in the Caroline Is. All are endemic and 5 are new to science. The distributions are summarized in Table I. Two genera are present, *Rhyzodiastes* and *Omoglymmius*. Each has 3 species that spans the entire group of Caroline Is from Palau to Kusaie. Of the high islands, Palau has the most species, with 2 *Omoglymmius* and 1 *Rhyzodiastes*. Yap and Kusaie have 1 species in each genus, while 1 species of *Omoglymmius* occurs on Ponape and 1 species of *Rhyzodiastes* occurs on Truk. In both cases, the "missing" genus may merely have been overlooked. Both genera are large and complex and neither has been revised recently. Both contain many undescribed species, so our conclusions about the relationships of the Micronesian species must be somewhat tentative.

The 3 species of *Omoglymmius* belong to the large subgenus *Omoglymmius* s. str. which is found in the Palearctic, Nearctic, and Oriental Regions, and in the following island groups of the southwestern Pacific: Philippines, Moluccas, New Guinea, Solomons and Carolines. The species from the Carolines belong to a large species group characterized by having 1 temporal seta and a narrow antennal groove. This group ranges from the Philippines and Moluccas to the Solomons. Relationships within this great complex are difficult to work out because it has great structural uniformity, and the characters which are used to differentiate species are minor features such as size and distribution of pronotal punctures, the proportions of the pronotum, the depth of the elytral striae and the size of their punctures. All these character states are easily reversible, so it is difficult to distinguish close relationship from evolutionary convergence or chance similarity. The 3 Micronesian species might represent the products of allopatric speciation of a single ancestral stock, or they might equally well represent the result of 3 separate invasions of the islands. The invading stocks could have drifted eastward directly from the Moluccas or the southern Philippines. They could also have come from the Bismarck Archipelago or from New Guinea in logs by first drifting westward in the South Equatorial Current, then northward into the countercurrent.

Rhyzodiastes is a genus with a discontinuous distribution. It is found in eastern South America and the Amazon Basin, but not in the Andes nor the borders of the Caribbean Sea. It is also found in a vast region extending from New Zealand and Fiji to Burma and Taiwan. It seems likely to be a genus of Gondwanian origin that has extended its range westward relatively recently into part of the Oriental Region. In contrast to *Omoglymmius*, the 3 Micronesian species of *Rhyzodiastes* are extremely different from one another, and must represent 3 separate invasions of the islands. *Rhyzodiastes pollinosus* n.sp. resembles *R. raffrayi* (Grouvelle) of Halmahera (Moluccas) and *R. spissicornis* (Fairmaire) of Malaya, and is probably related to them. The other 2 Micronesian species are so distinctive that it is difficult to decide which extralimital species is most closely related to each. *R. sul-*

cicollis (Grouvelle) is the only species from the Pacific region that has coarsely punctate elytral striae, so it has a strong superficial similarity to several South American species, almost certainly a result of convergent evolution. *R. maritimus* n. sp. is perhaps most closely related to *R. guineensis* (Grouvelle) of New Guinea.

An interesting problem is posed by those species of Micronesian Rhysodini that are found on more than 1 island. This is almost unknown elsewhere. In general, each rhysodine species is endemic to a single land mass except in cases where it is obvious that land connections existed in the late Pleistocene, and have been interrupted in the past few thousand years. Some of the Micronesian species occur on a high island and also on one or more distant low coral islands. Others occur on 2 or 3 of the high islands.

The most widespread species is *Rhyzodiastes sulcicollis.* It is known from most of the cluster of small high islands which lie at the center of Truk. It is also known from islet of Pis, on the N side of the barrier reef of Truk, about 25 km from the nearest high island, as well as from Nama, about 80 km E of Truk, and Satawal and Woleai to the west of Truk, the latter over 800 km from Truk. These isolated populations show no obvious differences from one another. The most probable explanation for the presence of Rhysodini on such isolated and ephemeral habitats is transport by man, perhaps in building materials or firewood transported in canoes from the high islands of Truk to distant coral islands where such supplies were very limited. Records of this species from coconut logs and breadfruit husks suggest that it could have been brought to the atolls in either of these crops. Recent transportation in floating logs cannot be ruled out entirely, but it seems unlikely. One other species is found on an atoll, *Rhyzodiastes pollinosus,* on the atoll of Ulithi, in addition to the high islands of Palau and Yap.

Two species are known from more than 1 high island, *R. pollinosus* on Yap and Palau, and *Omoglymmius oceanicus* n. sp. from Ponape, Palau and Kusaie. In both cases the populations on the various islands seem identical, so that spread from one island to the other seems likely to be very recent. For this reason, introduction by man is probably the most likely cause. *Omoglymmius oceanicus* is represented from Palau by only 1 specimen so there is a possibility of mislabelling and its presence is questionable.

SYSTEMATICS

Key to Micronesian Species of Rhysodini

1. Antennal segments V–X each with a complete subapical ring of minor setae; each elytron with 7 impressed, coarsely punctate striae; eye oval, large, deeper than long 2

   Antennal segments V–X each with a narrow band or tuft of minor setae confined

to ventral surface; each elytron with 2–4 striae, or with raised costae; eye reduced, crescentic, longer than deep 4

2(1). Temporal lobe sinuate between medial angle and occipital angle 3

Temporal lobe evenly convex between medial angle and occipital angle, which is indistinct .... **3. Omoglymmius oceanicus** n. sp.

3(2). Outer carina of pronotum punctate; inner carina dilated at base .... **1. Omoglymmius caelatus** n. sp.

Outer carina impunctate; inner carina narrow, pointed at base .... **2. Omoglymmius impletus** n. sp.

4(1). Elytron entirely pollinose except for strip along suture and 3 raised carinae; paramedian grooves of pronotum broad, deep, broadly pollinose .... **4. Rhyzodiastes polinosus** n. sp.

Elytron largely glabrous, pollinosity confined to narrow strips in some striae or to strial punctures; paramedian grooves narrow, linear 5

5(4). Each elytron with 4 striae, inner and outermost ones, each a row of coarse punctures, 2nd and 3rd impressed; orbital groove absent .... **5. Rhyzodiastes sulcicollis** (Grouvelle)

Each elytron with only 2 striae; orbital groove present .... **6. Rhyzodiastes maritimus** n. sp.

Subtribe OMOGLYMMIINA

Outer antennal segments each with minor setae forming complete subapical ring; elytral striation complete, marginal stria being the 7th from suture.

Genus **Omoglymmius** Ganglbauer

Omoglymmius Ganglbauer, 1892, Die Käfer von Mitteleuropa, I. Familienreihe Caraboidae: 553, 534 (type-species: *Rhysodes germari* Ganglb. of Europe).

One spur each on middle and hind tibiae; medial angle of temporal lobe simple, not emarginate; paramedian grooves of pronotum complete.

All Micronesian species belong in subgenus *Omoglymmius* s. str., with eyes and hind wings fully developed; antenna without apical stylet; marginal groove of pronotum complete; spur of middle tibia curved or hooked; punctures of abdominal Sternites III–V scattered; ♀ with enlarged lateral pits on Sternite IV.

The portion of Arrow's (1942) key to *Omoglymmius* to which the Micronesian species would trace, is almost unusuable, since he based his separations almost entirely on the relative size of strial punctures and the depth of the striae themselves. We will provide a complete key to the species of *Omoglymmius* in Part III of our monograph. In the interim, we provide a key to the described species of *Omoglymmius* from the SE Asian and Pacific regions. There are a great many undescribed species from the area, perhaps as many as 25.

Key to Omoglymmius of Southeast Asia and the Pacific

1. Pronotum with outer carina as wide as inner one, or nearly as wide 2

Pronotum with outer carina less than ½ as wide as inner one . . . Andaman Is. .... **solitarius** (Arrow)

2(1). Pronotum without marginal setae 3
Pronotum with several marginal setae; anterior part of head elongate . . . Sumbawa .... **bucculatus** (Arrow)
3(2). Elytron with about 7 setae in Stria IV . . . Malay Peninsula .... **malaicus** (Arrow)
Elytron without setae in Stria IV, or with seta at base of Stria and 1 at apex . . . 4
4(3). Postorbital lobe distinct 5
Postorbital lobe absent 7
5(4). Postorbital lobe very large, protruding; elytral striae not at all impressed, represented by rows of fine punctures . . . New Guinea .... **capito** (Grouvelle)
Postorbital lobe small; striae impressed, more coarsely punctate 6
6(5). Outer antennal segments coarsely punctate; postorbital lobe moderately small . . . New Guinea .... **pulvinatus** (Grouvelle)
Outer antennal segments finely punctate; postorbital lobe very small, easily overlooked . . .New Guinea .... **Cheesmanae** (Arrow)
7(4). Margin of temporal lobe evenly curved between medial and occipital angles . . . 8
Margin of temporal lobe distinctly emarginate between medial and occipital angles 10
8(7). Frontal grooves linear anteriorly; median lobe relatively wide, distinctly pointed posteriorly . . . Caroline Is .... **3. oceanicus** n. sp.
Frontal grooves broader, not linear anteriorly; median lobe relatively narrow, very obtuse posteriorly 9
9(8). Elytral striae deep, intervals convex; pronotum elongate, distinctly narrowed at base; temporal lobe punctate . . . New Guinea .... **vicinus** (Grouvelle)
Elytral striae shallow; intervals nearly flat; pronotum relatively short, its base scarcely narrower than its widest point; temporal lobe almost impunctate, with a very few punctures near eye . . . Moluccas ....
.... **batchianus** (Arrow) and **humeralis** (Grouvelle) (doubtfully distinct)
10(7). Base of Interval V forming short longitudinal scarp at base of Stria IV; ♂ with ventral tooth of anterior femur vestigial or absent 11
Base of Interval V not forming longitudinal scarp; ♂ with well developed ventral tooth on anterior femur 13
11(10). Outer carina of pronotum entirely impunctate; median lobe broad, impunctate; temporal lobe with a few punctures near eye; ventral tooth entirely absent from anterior femur of ♂ . . . Yap .... **2. impletus** n. sp.
Outer carina of pronotum punctate; anterior femur of ♂ with vestigial tooth . 12
12(11). Temporal lobe entirely punctate; median lobe punctate; marginal groove of pronotum narrow . . . New Guinea .... **gracilicornis** (Grouvelle)
Temporal lobe with punctures confined to lateral ½; median lobe impunctate; marginal groove of pronotum dilated . . .Palau .... **1. caelatus** n. sp.
13(10). Pronotum broadest at base; elytral striae shallow; intervals nearly flat . . . Tanimbar .... **quadraticollis** (Arrow)
Pronotum widest near middle; elytral striae deep; intervals convex, intervals III, IV more elevated anteriorly than others . . . Luzon . . . **philippensis** (Chevrolat)

1. **Omoglymmius caelatus** Bell and Bell. n. sp. (Fig. 1a–c)

Length 5.8–7.1 mm; outer antennal segments not punctate; head slightly longer than wide, preocular portion not elongate; median lobe smooth, obtusely pointed posteriorly; frontal grooves moderately broad; antennal groove narrow, distinct, short; medial angles of temporal lobes obtuse, separated; margin distinctly sinuate between medial and occipital angles; temporal lobes each with 13–15 punctures, mostly in lateral ½; 1 temporal seta,

distinctly medial to margin; mentum densely punctate with 25–30 punctures; postorbital area pollinose, with scattered punctures; gular groove pollinose, deepened anteriorly.

Pronotum elongate, length/greatest width = ca. 1.28; pronotum widest near middle, moderately narrowed anteriorly, scarcely so posteriorly; lateral margin scarcely sinuate anterior to hind angle; paramedian groove moderately broad, about ⅔ as broad as outer carina at middle; inner carina impunctate, slightly broader than outer carinae at middle, narrowed posteriorly, dilated at extreme base; outer carina with about 30 coarse punctures scattered throughout; marginal groove wide, deep, pollinose; prosternum with about 20–25 coarse punctures; pronotal epipleura with about 15 coarse punctures throughout.

Elytron with humeral tubercle low, rounded, pollinose; distinct longitudinal pollinose scarp at base of Stria IV; transverse scarp of elytron not pollinose; elytral striae shallow, scarcely impressed; intervals flat; elytral punctures small, about ⅓ as wide as an interval, widely spaced, separated by more than length of a puncture; punctures of Stria I, II smaller than those of remaining striae; elytral setae much reduced, 1 seta usually present in apical striole, and 1–3 in tip of Stria VII; none in Stria II and 0–1 at base of Stria IV; metasternum with many scattered punctures; Sternite IV with lateral pit in both sexes, slightly shallower in ♂; Sternite VI with 35–40 scattered punctures, lateral ones slightly coalesced; legs coarsely punctured; ♂ with small, obtuse vestige of ventral tooth on anterior femur.

Holotype ♂ (US 100083), Palau Is, Peleliu: W coast, 2 Feb. 1948, H. S. Dybas.

DISTRIBUTION: Caroline Is (Palau).

PALAU. PELELIU: (paratypes) 2 ♀, 1 ♂, E coast, 27 Jan. 1948, Dybas. KOROR: (paratype) 1 ♀, limestone ridge S of inlet, 17 Jan. 1948, Dybas. All specimens labelled Pacific Sci. Board Ent. Surv of Micronesia. (BISHOP, FMNH).

This species can be distinguished from *O. impletus* by the coarsely punctate outer pronotal carina, the broad frontal grooves and the shorter head. *O. oceanicus* differs in lacking an emargination on the posteriomedial margin of the temporal lobe, in having the punctures of the outer carina both fewer and much finer, in having a distinct ventral tooth on the anterior femur of the ♂ and in having much deeper elytral striae.

2. **Omoglymmius impletus** Bell and Bell, n. sp. (Fig. 2a–c)

Length 5.2–6.1 mm; outer antennal segments not punctate; head distinctly longer than wide, preocular portion slightly elongate; median lobe broad, smooth, obtusely pointed posteriorly; frontal grooves very narrow; antennal groove narrow, distinct, short; medial angles of temporal lobes rather sharp, closely approximate; margin strongly sinuate between medial and occipital angles; temporal lobes each with 8–10 shallow, fine punctures, mostly near lateral margin; 1 temporal seta nearly at posterolateral margin; postorbital area pollinose, scarcely punctate; mentum with 10–15 fine, scattered punctures; gular grooves pollinose, shallow throughout.

Pronotum less elongate than in other Micronesian species, length/greatest width = ca. 1.18; pronotum widest slightly behind middle, slightly narrowed posteriorly, more strongly so anteriorly; lateral margin scarcely sinuate anterior to hind angle; paramedian groove broad, as wide as outer carina at middle; inner carina impunctate, distinctly broader than outer carina at middle, tapering to a point posteriorly; outer carina narrow, entirely impunctate; marginal groove very narrow, deep, slightly punctate; pronotal epipleura with 5–

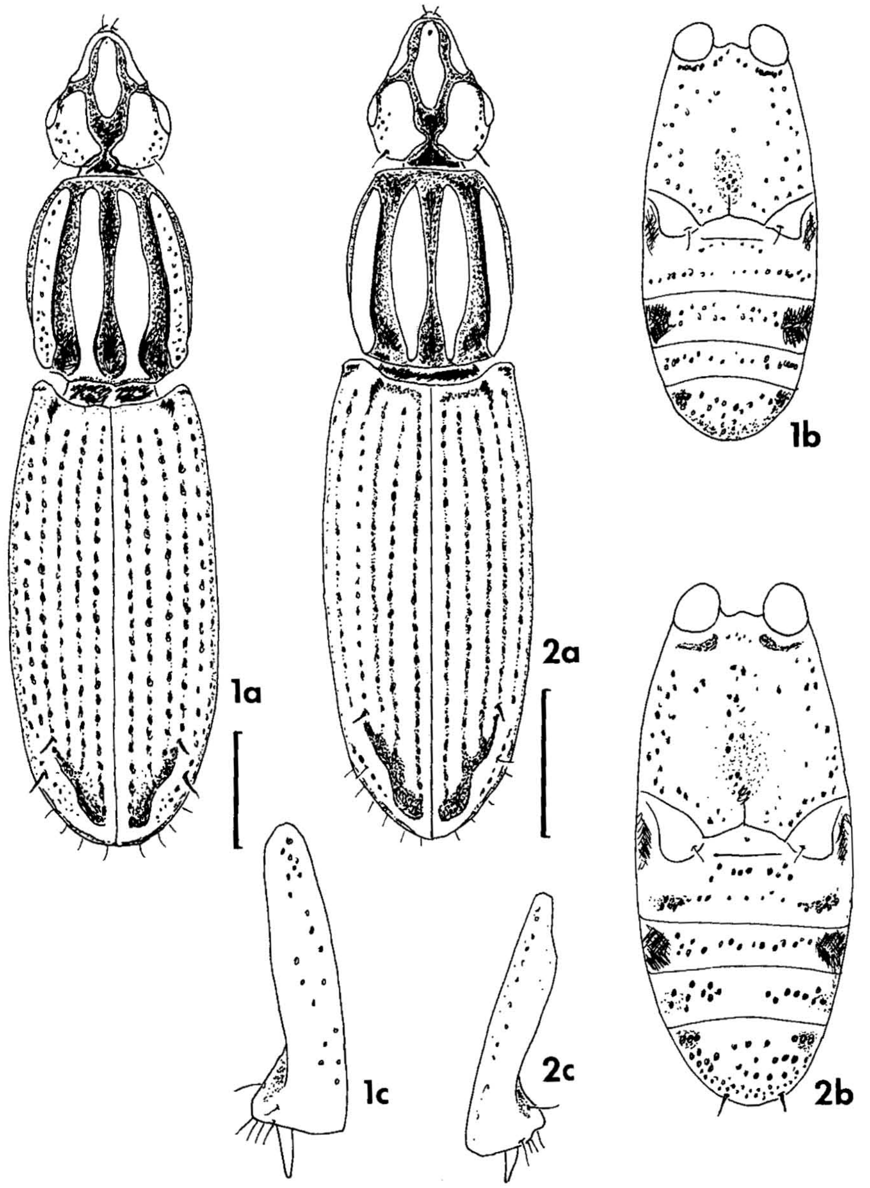


FIGURE 1–2. 1, *Omoglymmius caelatus* n. sp.: a, dorsal view; b, ventral view, metasternum, abdomen; c, hind tibia of male. 2, *O. impletus* n. sp.: a, dorsal view; b, ventral view, metasternum, abdomen; c, hind tibia of male. Scales with dorsal views = 1 mm.

7 faint punctures posteriorly, otherwise smooth; prosternum with only 5–6 shallow punctures, mostly anterior to coxal cavities.

Humeral tubercle somewhat more prominent than in preceding species; distinct longitudinal pollinose scarp at base of Stria IV; transverse scarp of elytron not pollinose or sometimes slightly so; elytral striae deep; intervals convex, Intervals III and V slightly more convex and elevated than others anteriorly; strial punctures about ⅓ as broad as an interval, slightly elongate, closer together than the length of 1 puncture; elytral setae less reduced than in *O. caelatus,* but varying; Stria IV usually with 1 anterior and 1 posterior seta (but either or both may be absent); 1 seta in apical striole; about 4 in apex of Stria VII; metasternum with many scattered punctures; Sternite IV with deep, lateral pit in both sexes; Sternite VI with about 20 punctures, mainly lateral and apical; legs sparsely punctured; ♂ without a ventral tooth on anterior femur (a very slight angle may represent the vestige of a tooth).

Holotype ♂ (BISHOP 12,116), Yap: Tomil Distr, Jul.–Aug. 1950, R. J. Goss.

DISTRIBUTION: Caroline Is (Yap).

YAP. YAP: (paratypes) 2 ♀, Jul.–Aug. 1950, Goss; 1♀, Ruul Distr, Jul.–Aug. 1950, Goss; 2 ♂ (on same card), same data as preceding (BISHOP, FMNH, MCZ, US).

The elongate head, very narrow frontal grooves, fine marginal groove, and entirely impunctate outer carina characterize this species, and separate it sharply from the preceding one.

3. **Omoglymmius oceanicus** Bell and Bell, n. sp. (Fig. 3a–c)

Length 5.0–6.8 mm; outer antennal segments not punctate; head slightly longer than wide, anterior portion not elongate; median lobe smooth, obtusely pointed posteriorly; frontal grooves rather narrow; antennal groove narrow, distinct, short; medial angles of temporal lobes obtusely rounded, approximate, margin not at all sinuate but evenly rounded between medial angle and occipital angle, which is broadly rounded; temporal lobes each with 8–10 punctures in lateral ½, 1 temporal seta located very close to margin; postorbital area with 5–8 minute punctures; mentum with 12–14 scattered punctures; gular groove pollinose, deepened anteriorly.

Pronotum elongate, length/greatest width = ca. 1.28; pronotum widest near middle, apex strongly narrowed, base distinctly narrow (base proportionally narrower than in other Micronesian species); lateral margin not sinuate anterior to hind angle; paramedian groove narrow, only about half as wide as outer carina at middle; inner carina impunctate, narrowed posteriorly, then dilated at extreme base; outer carina as broad as inner one at middle with about 14 small, scattered punctures (much finer and less conspicuous than those of *O. caelatus*); marginal groove narrow, deep; pronotal epipleura with 10–12 small punctures scattered along its entire length; prosternum with about 20 punctures, mostly anterior to coxal cavities.

Elytron with humeral tubercle more pointed than in other Micronesian species, pollinose at base; distinct longitudinal pollinose scarp present at base of Stria IV; transverse scarp of elytron not pollinose; elytral striae deep, impressed, intervals convex; elytral punctures about ⅓ as wide as an interval, punctures not elongate, close together, separated by less than the diameter of one of them; elytral setae less reduced than in other Micronesian species; Stria II in some specimens with a posterior seta; Stria IV with a posterior seta; apical striole with 1 seta; 1–5 setae in tip of Stria VII, metasternum with scattered punctures medially and laterally; Sternite IV with deep lateral pits in both sexes; Sternite VI with about 25 scattered punctures; legs sparsely punctured; anterior femur of ♂ with small but distinct ventral tooth.

Holotype ♂ (US 100084), Kusaie: Mutunlik, 22 m, 31 Jan. 1953, J. F. G. Clarke.

DISTRIBUTION: Caroline Is.

PALAU. "Palau": 1 ♀, 8 Apr. 1936, Z. Ono (BISHOP).

PONAPE: 3 ♂, 2 ♀, Awakpa, Uh Distr, 2 Mar. 1948, H. S. Dybas; 1 ♂, Ronkiti-One, 18 Jul. 1939, Teiso Esaki (BISHOP, FMNH, KU, UVM).

KUSAIE: (paratypes) 2 ♀, same data as holotype; 1 ♂, same loc. as holotype, 6 Mar. 1953, rotten wood, Clarke; 1 ♀, Malem, 19 Dec. 1937, Esaki (BISHOP, CAS, US).

This species is easily separated from the other Micronesian *Omoglymmius* by the absence of an emargination on the posteromedial margin of the temporal lobe. Specimens from Ponape, Palau and Kusaie appear to be identical.

SUBTRIBE CLINIDIINA

Minor setae of antennal segments grouped in tufts or bands on ventral surface.

Genus **Rhyzodiastes** Fairmaire

Rhyzodiastes Fairmaire, 1895. Ann. Soc. Ent. Belg. **39:**11 (type species: *R. parumcostatus* Fairm. of Brazil, erroneously attributed to Madagascar).

Rhyzodiastes has two spurs each on the middle and hind tibiae, reduced elytral striation, reduced eyes and reduced hind wings. The paramedian grooves of the pronotum are complete and the antenna has an apical stylet.

4. **Rhyzodiastes pollinosus** Bell and Bell, n. sp. (Fig. 4a–c)

Length 5.1–7.8 mm; antennal stylet short, acute; tufts of minor setae present on Segments V–X; basal setae of antennae limited to Segments VIII–X; antennal Segments I–IV pollinose above and below; Segments V–X with pollinosity limited to dorsal surface; head slightly longer than wide; median lobe short, diamond-shaped, acutely pointed posteriorly, its tip anterior to eye; postclypeal grooves continuous with frontal grooves, both broad; temporal lobes broadly separated, closest together opposite middle of eyes; orbital groove deep, pilose; 1–3 temporal setae on each side; eye crescentic; temporal lobe in lateral view with pronounced overhang, separated by deep notch from suborbital lobe; entire occipital region including temporal and suborbital lobes strongly pilose; mentum usually with 6 prelabial and 2 postlabial setae; head with broad strip of pollinosity in each gular groove, these join pilosity of suborbital tubercles posteriorly forming an 'X'-shaped pattern, anteriorly they join a transverse pollinose groove, isolating a glabrous triangle; strips of pollinosity run anteriorly in midline and along margins of mentum.

Pronotum elongate, oval, length/greatest width = 1.45; widest at basal ⅓, sides oblique anteriorly, evenly narrowed to apex, distinctly narrowed to base; hind angles very obtuse; base strongly oblique, forming obtuse angle at midline; pronotal setae absent; median groove deep, relatively broad, closed anteriorly, open posteriorly, pollinose; paramedian groove very broad, medial slope gradual, glabrous, lateral slope steep, pollinose; inner carina with narrow flat disc, forming ill-defined angle with paramedian groove; outer carinae narrow, curved, of even width; marginal groove not impressed, but represented by a complete band of pollinosity.

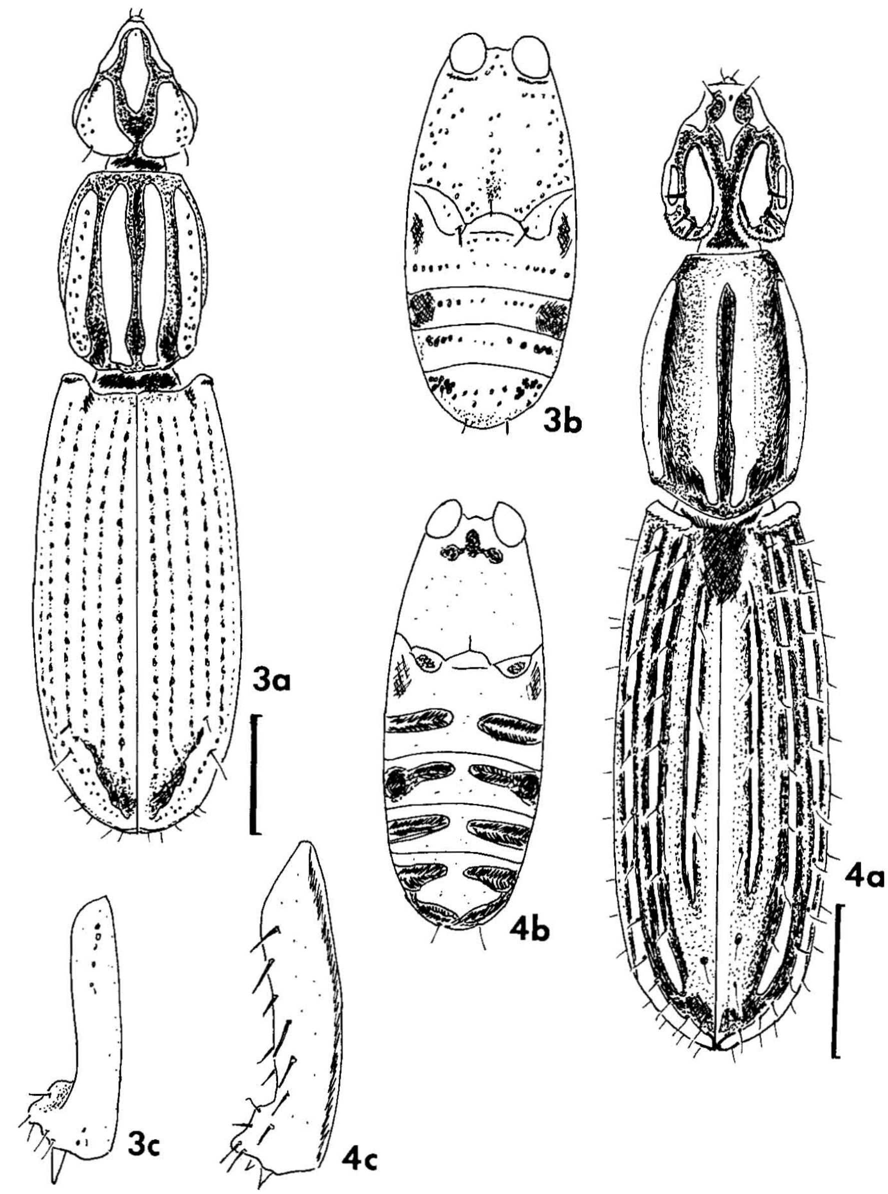


FIGURE 3–4. 3, *Omoglymmius oceanicus* n. sp.: a, dorsal view; b, ventral view, metasternum, abdomen; c, hind tibia of male. 4, *Rhyzodiastes pollinosus* n. sp.: a, dorsal view; b, ventral view, metasternum, abdomen; c, hind tibia of male. Scales with dorsal views = 1 mm.

Elytra without distinct striae except for traces of Stria I, but with raised glabrous carinae; sutural interval also glabrous; elytron otherwise entirely pollinose; elytron with many setae, about 5 medial to inner carina, 10–12 between inner and 2nd carinae, 12–14 between 2nd and 3rd carinae, and 15–20 between 3rd and 4th carinae; metasternum without median sulcus; Sternites III–V each with a pair of broad pollinose transverse grooves, well separated at midline; Sternite VI with broad marginal pollinose band which merges at anterior ends with pair of transverse grooves; lateral end of transverse groove of Sternite IV slightly enlarged, deepened in ♂, very strongly so in ♀; all femora with both dorsal and ventral pollinose bands; all tibiae with lateral pollinose bands; all femora with 4–5 ventral setae; hind coxae pollinose; all trochanters pollinose; ♂ with front and hind trochanters pointed, but without ventral tooth on anterior femur; calcars of ♂ pointed at apex, and with dorsal surface sinuate or notched.

Holotype ♂ (BISHOP 12,117), Yap, Jul.–Aug. 1950, R. J. Goss.

DISTRIBUTION: Caroline Is (western).

PALAU. PELELIU: 1 ♀, NE coast, 28 Jan. 1948, H. S. Dybas (BISHOP).

YAP. YAP: (paratypes) 1 ♂, same data as holotype; 2 ♀, 1 ♂, Gagil Distr, Jul.–Aug. 1950, Goss. MAP: (paratype) 1 ♂, Jul.–Aug. 1950, Goss. RUMUNG: (paratypes) 2 ♂, 1 ♀ (on same mount), Jul.–Aug. 1950, Goss (BISHOP, FMNH, MCZ, US, UVM).

CAROLINE ATOLLS. ULITHI: 3 ♂, Potangeras Islet, 10 Nov. 1947, Dybas (BISHOP, CAS, FMNH).

The glabrous elytral carinae on an otherwise pollinose elytron will differentiate this species from all others in the Indopacific Region. Certain South American species have similar carinate elytra. These species differ from *R. sulcicollis* in having the occipital portion of the temporal lobe densely pilose and in having a pollinose strip above the eye.

The most similar species in the Indopacific Region are probably *Rhyzodiastes spissicornis* (Fairmaire) and *R. raffrayi* (Grouvelle). Neither of these has narrow raised elytral carinae separated by completely pollinose areas. *R. spissicornis* from the Malay Peninsula has a similar arrangement of elytral setae to those of *R. pollinosus* but the tufts of minor setae begin on antennal Segment IV; the trochanters of the ♂ are not pointed, and the tibiae are much thickened. *R. raffrayi* of the Moluccas has a pronotum which is similar in form to that of *R. pollinosus,* though it is less elongate. The trochanters of the ♂ are pointed, but the elytral setae are much reduced, and the orbital groove is absent.

5. Rhyzodiastes sulcicollis (Grouvelle) (Fig. 5a–c)

Clinidium sulcicolle Grouvelle, 1903, Rev. d'Entomol. Caen **22:** 137, 138 ("Iles Carolines: Hogolu"; type in MNHN).

Length 4.0–6.5 mm; antennal stylet short, pointed; tufts of minor setae present on Segments V–X; basal setae present on Segments V–X; Segment I with distinct apical pollinose band; Segment II with trace of one; outer segments without pollinosity; head slightly longer than wide; median lobe short, acute posteriorly, its tip anterior to eyes; median lobe with narrow connection on each side with antennal lobe, separating postclypeal groove from fron-

tal groove; postclypeal groove in form of oval depression; temporal lobes rather narrowly separated at middle, forming obtuse medial angle just posterior to posterior margin of eye; orbital groove entirely absent, small pollinose pit anterior to eye; temporal setae absent; eye crescentic; temporal lobe in lateral view with little overhang; suborbital tubercle small, indistinct; mentum with 4 prelabial and 2 postlabial setae; pilosity of occiput continued across ventral surface as a "collar" just anterior to neck; gular grooves very narrow, shallow, not pollinose; transverse strip of pollinosity across base of mentum connecting to narrow median and lateral strips which end near middle of mentum.

Pronotum elongate, narrow, length/greatest width = 1.65; widest near middle, lateral margin feebly curved, narrowed at apex, base; apex truncate, base rounded; hind angles very obtuse; pronotal seta absent; median groove very narrow, linear, its margins finely pollinose; groove closed at both ends, both median pits distinctly wider than groove, both removed from ends of groove, groove continues anteriorly to anterior median pit, posterior median pit equidistant between middle of prontum and pronotal base (a shallow median depression posterior to it looking like a 2nd pit); paramedian groove narrow, posterior end with small, deep, punctiform basal impression, pollinosity of paramedian groove restricted to very narrow strip along lateral margin; inner carina with well-defined lateral margin, nearly straight, wider than paramedian groove; outer carina ⅔ as broad as inner carina at middle, curved, slightly tapered anteriorly; marginal groove entire, shallow except at posterior end, very finely pollinose.

Elytron with 4 distinct striae; Stria I scarcely impressed, represented by coarse punctures, slightly abbreviated posteriorly; Striae II and III deeply impressed, lateral margins of each much higher than medial margin, suggesting a carina; Striae II and III uniting posteriorly; Stria IV not impressed through most of its length, represented by a row of coarse punctures, base of Stria IV entirely effaced; apex of Stria IV impressed, impunctate; elytra largely glabrous, with pollinosity limited to Striae II, III and punctures of Striae I, IV; elytral setae entirely absent except for 4–6 in apex of Stria IV; metasternum without median sulcus; Sternites III–V each with a pair of transverse pollinose grooves which are rather narrowly separated medially, where each ends in an enlarged puncture; a similar pair of pits, but no transverse grooves on Sternite II; lateral ends of transverse Sulci IV and V forming enlarged pits in both sexes, IV more enlarged in ♀ than ♂; Sternite VI with submarginal groove and 2 pairs of anterolateral pits; femora entirely devoid of pollinosity and setae; hind coxae glabrous, trochanters glabrous, rounded in both sexes; ♂ without tooth on anterior femur; calcars small, pointed. The ♂ genitalia of this species have been illustrated in Bell & Bell (1978).

DISTRIBUTION: Caroline Is (central).

CAROLINE ATOLLS. WOLEAI: 1 ♀, Utagal I, 28 Jul. 1946, H. K. Townes. SATAWAL: 2 ♂, 1 ♀, 6 Feb. 1953, ex coconut log, J. W. Beardsley. NAMA: 1 ♀, 16 Feb. 1949, rotting wood, R. W. L. Potts (BISHOP, CAS, US).

TRUK. PIS: 1 ♂, 2 ♀, 3 Jun. 1946, Townes. DUBLON: 5 ♂, 3 ♀, 22–23, 29 Dec. 1935, 5, 9 Jan. 1936, rotten bark, Z. Ono. WENA (Moen): 1 ♂, 1 ♀, N basin, Mt. Chukumong, 10 Feb. 1949, ex rotten breadfruit, Potts; 1 ♀, 31 May 1946, Townes. TOL: 3 ♂, 2 ♀, 24 May 1946, R. G. Oakley; 1 ♀, Mt. Unibot, 25–50 m, 30 Dec. 1952, J. L. Gressitt. PAREM: 1 ♂, 2 ♀, 10 Mar. 1949, ex rotting breadfruit, Potts (BISHOP, BMNH, CAS, FMNH, MCZ, US, UVM).

The coarse strial punctures and the absence of an orbital groove easily separate this species from others of the genus. This species is unusually

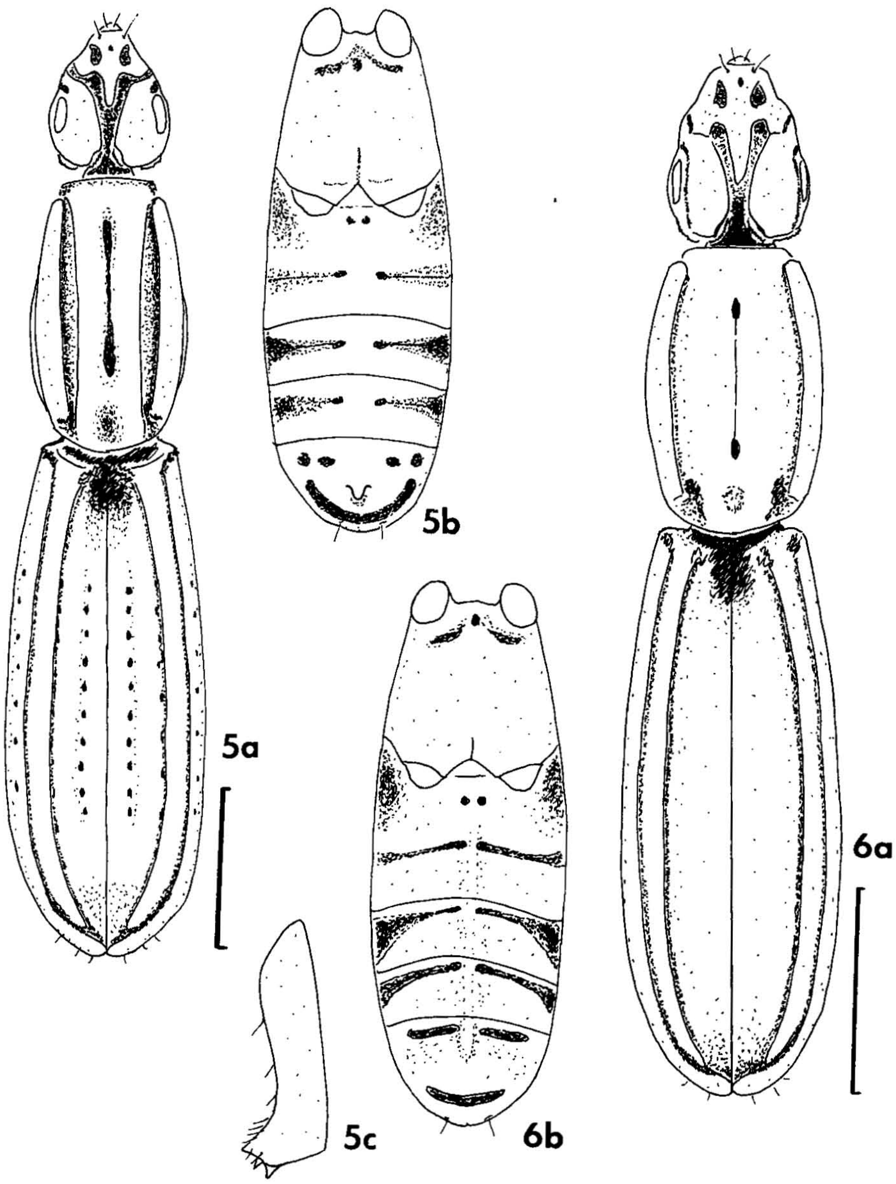


FIGURE 5–6. 5, *Rhyzodiastes sulcicollis* (Grouvelle): a, dorsal view; b, ventral view, metasternum, abdomen; c, hind tibia of male. 6, *R. maritimus* n. sp.: a, dorsal view; b, ventral view, metasternum, abdomen. Scales with dorsal views = 1 mm.

variable, and the variation is partly geographical. The ♀s are of 2 types: a large form, 5.0–6.5 mm long, with a distinct tubercle at the middle of the 6th sternite, and a small form, 4.0–5.0 mm long, without any trace of such a tubercle. The small form is confined to the high islands of Truk (Param, Tol and Dublon) but there are no data to suggest an altitudinal restriction in these specimens. The larger one is found both on the high islands and on the atoll and barrier islands from Woleai to Nama. The only altitudinal datum for the large form is the 25–50 m elevation of Tol. In the high islands the 2 forms are about equally abundant. The ♂s do not separate so clearly. Almost all ♂s are between 5.0 and 6.0 mm in length, and have a tubercle on the 6th sternite. These might be the ♂ of the large form. One specimen from Tol, 5.6 mm long, has a very reduced tubercle and might almost be considered "knobless." If the 2 forms were distinct, it would seem to be much too large to be the ♂ of the small form. Another ♂, also from Tol, is only 4.0 mm in length, and has a small pollinose spot rather than a distinct tubercle. If the two are distinct, perhaps this specimen represents the only known ♂ of the small form.

The status of these 2 forms merits further investigation. Perhaps they are distinct but very closely related species. They may have originated by allopatric speciation on different high islands of Truk, and the modern sympatry in the high islands may result from dispersal by humans. If the two are specifically distinct, then Grouvelle's name belongs to the larger form.

6. **Rhyzodiastes maritimus** Bell and Bell, n. sp. (Fig. 6a–b)

Length 4.3–6.2 mm; antennal stylet very short, pointed; tufts of minor setae present on Segments V–X; basal setae present on Segments V–X; Segment I with apical pollinose band which is interrupted ventrally; Segment II with trace of pollinosity dorsally; pollinosity otherwise absent from antenna; head distinctly longer than wide; median lobe longer than in other Micronesian species, ending in acute point opposite middle of eye; median lobe connected laterally to antennal lobe, separating postclypeal groove from frontal groove; postclypeal groove forming oval depression; temporal lobes converging posteriorly, coming closest posterior to eye, forming rounded medial angles; orbital groove fine, linear, complete, extending to occiput; temporal setae absent; eye very narrow, crescentic, smaller than in other Micronesian species; temporal lobe in lateral view with distinct overhang; suborbital tubercle scarcely evident; mentum with 4 prelabial and 2 postlabial setae; pilosity of occiput continuing across ventral surface of head as narrow "collar" just anterior to neck; gular grooves very shallow, scarcely pollinose; mentum with narrow transverse pollinose grooves but without median longitudinal pollinose groove.

Pronotum elongate, oval; length/greatest width = 1.48, widest near middle, lateral margins distinctly curved, base only slightly wider than apex; apex truncate, base rounded; hind angles very obtuse; pronotal setae absent; median groove very fine, linear, abbreviated both anteriorly and posteriorly, ending anteriorly at anteromedian pit, which is separated from anterior margin by more than its own length; median groove ending posteriorly at posteromedian pit which is closer to middle of pronotum than to base of pronotum; paramedian grooves linear, curved, pollinose, ending posteriorly at basal impression which is closed pos-

teriorly; inner carinae broad, flat, scarcely cariniform; outer carinae about ½ as broad as inner ones, of equal width throughout, curved; marginal groove entirely absent.

Each elytron with only 2 distinct striae (corresponding to Striae II and III of *R. sulcicollis*; both striae complete, impressed, finely punctate, pollinose, lateral margin of each stria much higher than medial margin, suggesting a carina; 4–6 setae in a short striole near apex (probably a remnant of marginal stria); metasternum without median sulcus; Sternites III–V each with transverse pollinose band which is narrowly interrupted at midline; Sternite II with a pair of pollinose spots; Sternite VI with a pair of transverse pollinose bands anteriorly interrupted at midline and an entire submarginal pollinose band posteriorly; ♀ with lateral pit in Segment IV (♂ unknown); midline of abdomen slightly carinate; femora entirely devoid of pollinosity and setae; trochanters and coxae glabrous.

Holotype ♀ (US 100085), Kusaie: Mutunlik, 22 m, 31 Jan. 1953, J. F. G. Clarke.

DISTRIBUTION: Caroline Is (Kusaie).

KUSAIE: (paratypes) 1 ♀, same loc. as holotype, 6 Mar. 1953, rotten wood, Clarke; 1 ♀, Mt. Matante, 180 m, 12 Feb. 1953, decaying *Hibiscus tiliaceus*, Clarke (Bishop, FMNH).

The presence of only 2 well-developed elytral striae easily separates this species from the other Micronesian ones. It will not go through Arrow's key, since none of the species known to Arrow had the median groove reduced in the manner seen in *R. maritimus*. A literal interpretation of the key might lead to *R. proprius* (Broun) of New Zealand, but the latter species has the anterior and posterior pits of the pronotum greatly enlarged and the lateral carinae much broader at the middle than at the base and apex. It also has 3 distinct elytral striae. *Rhyzodiastes guineensis* (Grouvelle) of New Guinea is perhaps the closest known relative of *R. maritimus*. The elytral striation is almost identical, but the pronotum has a deep, full-length median groove.

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